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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,480	09/15/2005	Masahiro Yamakawa	4670-0110PUS1	8164

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BIRCH STEWART KOLASCH & BIRCH  
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FALLS CHURCH, VA 22040-0747

EXAMINER
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REDDY, KARUNA P

ART UNIT	PAPER NUMBER
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1796

NOTIFICATION DATE	DELIVERY MODE
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11/04/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/549,480	<b>Applicant(s)</b> YAMAKAWA ET AL.	
	<b>Examiner</b> KARUNA P. REDDY	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11 and 14-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This office action is in response to amendment filed 8/25/2009. Claims 1-10 and 12-13 are cancelled; claim 11 is amended; and claims 14-17 are added. Accordingly, claims 11 and 14-17 are currently pending in the application.

This action is made final in light of limitations to the claims that are newly presented following the preceding office action

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

3. Claims 11, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al (US 2002/0034686 A1) in view of Nissen et al (US 6,341,057 B1).

Yamakawa et al disclose, in example 2, a polymer binder for electrode comprising 84 parts of 2-ethylhexyl acrylate (i.e. reads on monomer unit "a"), 10 parts of methacrylonitrile (i.e. reads on monomer "b"), 2 parts of ethylene glycol dimethacrylate (i.e. reads on monomer unit "c"), 2 parts of methacrylic acid (i.e. reads on monomer unit "d") (paragraph 0100). The mass percentages of components a-d in examples 1 and 2 of prior art are essentially similar to parts by mass of examples 1 to 4 in table 1 of instant invention and read on the mole percentages of present claims. The binder can be used in batteries such as electric double layer capacitor (paragraph 0004).

The slurry comprises binder, active material and optional additives (paragraph 0057). As specific examples of the active material there can be mentioned

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carbonaceous material (paragraph 0059). As specific examples of the additives mention can be made of cellulose materials such as carboxymethyl cellulose (paragraph 0055) which reads on the thickener of instant claim 16. The electrode is fabricated by a procedure wherein a collector such as metal foil is coated with the slurry and thus formed coating is dried whereby the active material is fixed (i.e. bound) on the surface of collector (paragraph 0065). The battery comprises electrode and an electrolyte solution (paragraph 0070).

Yamakawa et al differ with respect to the electrolyte, and silent with respect to the glass transition temperature of binder polymer.

However, Nissen et al teach double layer capacitors (abstract) comprising current collectors, carbon electrodes with a polymer binder (col. 3, lines 36-39). The double layer capacitors based on tetraalkyl-ammonium salts have a high capacitance and higher power capability than double layer capacitors using electrolyte compositions of others like lithium salts. The formation of the interface layer appears highly dependent on ionic species of the electrolyte. The excellent performance of double layer capacitors on tetraalkyl-ammonium salts is ascribed to little, thin, stable and dense interface layers being formed at the electrode-electrolyte interface of such capacitors, allowing a narrow charge separation and a high capacitance. Examples of tetraalkyl ammonium salts include tetraethylammonium tetrafluoroborate and tetraethylammonium hexafluorophosphate (col. 4, lines 34-67). Therefore, in light of the teachings in Nissen et al, it would have been obvious to one skilled in art at the time invention was made to use the electrolytes of Nissen et al in the electric double layer capacitor of Yamakawa et al, for above mentioned advantages.

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With respect to glass transition temperature of the binder polymer, given that Yamakawa et al teach essentially the same binder polymer and comprises monomer units in similar mole% as recited in present claims, one of ordinary skill in the art would have a reasonable basis to believe that binder polymer of Yamakawa et al must intrinsically have the same glass transition temperature as the presently claimed binder polymer. Case law holds that a material and its properties are inseparable, See *In re Spada*, 911 F.2d 705,709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference.

4. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al (US 2002/0034686 A1) in view of Nissen et al (US 6,341,057 B1) as applied to claim 11, and further in view of Kasuke (JP 08-107047).

The discussion with respect to Yamakawa et al in view of Nissen et al in paragraph 3 above is incorporated herein by reference. Furthermore, additives including electrically conductive materials such as graphite and active carbon can be added to the slurry (paragraph 0062 of Yamakawa et al) which read on electroconductivity supplying agent of instant claim 17.

Yamakawa et al in view of Nissen et al are silent with respect to carbonaceous material comprising active carbon having a specific surface area of 30 m<sup>2</sup> or more.

However, Kasuke teaches an electric double layer capacitor where in the specific surface area of an active carbon material used as an anode and cathode is specified as 1000 m<sup>2</sup>/g to 2500 m<sup>2</sup>/g and 500 m<sup>2</sup>/g to 1500 m<sup>2</sup>/g respectively. These surface areas are specified to improve the capacitor output capacity (abstract). Therefore, in light of

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the teachings in Kasuke et al, it would have been obvious to one skilled in the art at the time invention was made to use carbonaceous material comprising active carbon having surface area between 500 to 2500 m<sup>2</sup>/g in the binder composition of Yamakawa et al in view of Nissen et al, for improving capacitor output capacity.

### ***Response to Arguments***

5. The rejections under 35 U.S.C. § 102/103 and 103 as set forth in paragraphs 4-6 in the preceding office action mailed 4/29/2009 are hereby overcome in light of the amendments filed 8/25/2009.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796